

# ***“Applications Training Manual”***

USING CYDEN iPULSE INTENSE PULSED LIGHT (IPL) DEVICE

## **LONG-TERM HAIR REDUCTION: A STEP-BY-STEP TREATMENT PROTOCOL**

**FOR AESTHETICIANS, BEAUTY THERAPISTS AND MEDICAL PROFESSIONALS  
PROVIDING COSMETIC TREATMENTS**

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**IMPORTANT ADVICE FOR THE USER:**

This Applications Manual provides guidance to assist in practical applications work with iPulse intense pulsed light. The information contained herein reflects state of the art technology in this field. The author will assume no liability for errors, which, despite adequate care and attention, cannot be ruled out entirely. The user alone bears full responsibility for actions performed in conjunction with this Applications Manual.

**WARNING:**

This detailed training manual is intended for general guidance in the use of the iPulse intense pulsed light device for long term epilation and does not constitute “A protocol produced by an expert medical or dental practitioner” as required by the Healthcare Commission for registration of an establishment in England and Wales under the Care Standards Act 2000 and described in the Dept of Health: National Minimum Standards and Regulations.

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## GENERAL INTRODUCTION

Experience since the introduction of laser and IPL treatments for long-term hair removal has shown that almost all skin types including European, Asian and Middle-Eastern, respond well to treatment. Demand has increased dramatically around the world from women and men for 'long term' hair removal with varying cultural influences including traditional factors, fashion, sport, personal feelings of well being and health requirements.

Only very dark skin types, particularly Afro-Caribbean, are problematic because of high levels of melanin in the epidermis absorbing light energy in competition with the melanin in the hair follicle. Ginger, blonde and grey/white hair also responds poorly to light-based treatments.

The current understanding of photo-epilation treatment is that at least three mechanisms are at work:

- (1.) Hair growth delay whereby the hair growth cycle is 'accelerated' into the Telogen or 'sleeping' phase which on some parts of the body may be several months;
- (2.) Hair follicles damaged by exposure to the laser or intense flash of light are 'miniaturised' and re-grow as lighter-coloured, finer hairs or vellus hair (no colour);
- (3.) Hair follicles are completely coagulated resulting in permanent damage to the cells responsible for re-growth of the hair.

In the USA, the Food and Drug Administration (FDA) has employed the phrases "...long term stable, or permanent, hair reduction." to describe the indication for use of FDA-cleared devices. However, the FDA also states:

"This means that although laser treatments with these devices will permanently reduce the total number of body hairs, they will not result in a permanent removal of all hair. The specific claim granted is "intended to effect stable, long-term, or permanent reduction" through selective targeting of melanin in hair follicles. Permanent hair reduction is defined as the long-term, stable reduction in the number of hairs re-growing after a treatment regime, which may include several sessions. The number of hairs regrowing must be stable over time greater than the duration of the complete growth cycle of hair follicles, which varies from four to twelve months according to body location. Permanent hair reduction does not necessarily imply the elimination of all hairs in the treatment area."

## IPL TECHNOLOGY ADVANCES - iPULSE

There are two key limitations to conventional IPL devices, an inability to produce a "true" long pulse matched to the thermal relaxation time of the target structure and secondly, fluctuations in the output spectrum which can lead to ineffective treatment with increased risk of side-effects. An alternative approach to producing long pulse, constant spectrum optical pulses along is found in the iPulse technology employed by CyDen.

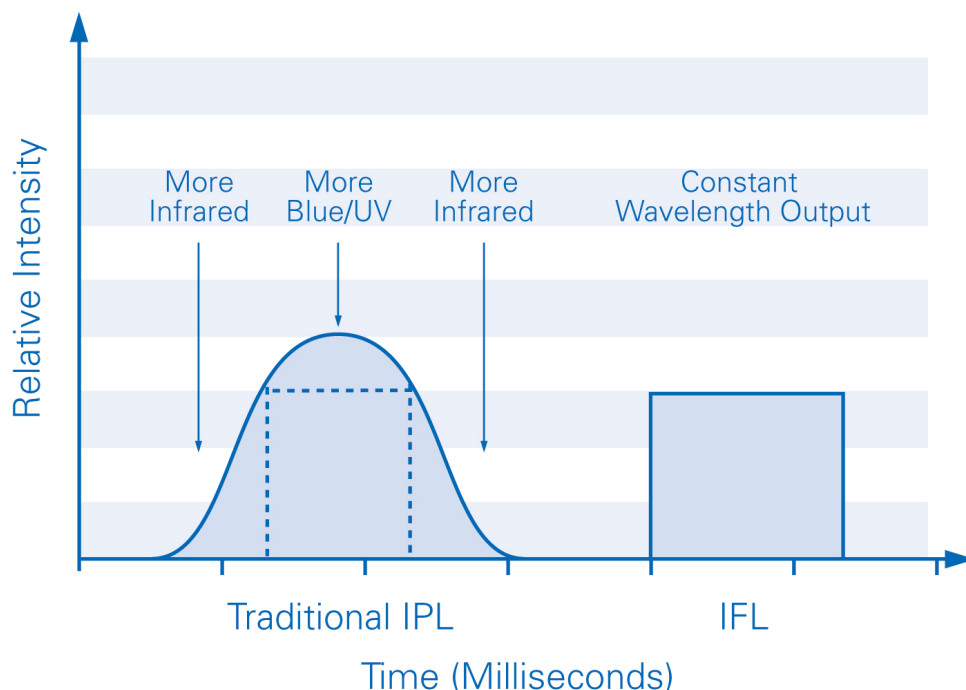
This novel IPL technology emits a wavelength range of between 530 and 1100nm and incorporates shorter, more efficient wavelengths for skin rejuvenation without the need for cut-off filters. This is achieved by having a uniform temporal profile. Figure 1 below shows a representation of the energy output from a traditional IPL and an improved, true long pulse model. As can be seen, in the traditional IPL, the output consists of a short, high intensity "spike" that gradually increases from zero to maximum intensity and decays back to zero. To construct an overall pulse duration in the order of the thermal relaxation time of the target structure, a series of pulses are required. In the case of the improved iPulse technology, the pulse shape is uniform, increasing from zero to maximum intensity almost instantaneously, remaining at maximum for the entire duration of the pulse then dropping to zero again instantaneously. The overall duration of the pulse is fully variable up to and beyond the thermal relaxation time of the target. The ability to produce true long pulses can reduce the



## TRAINING MANUAL

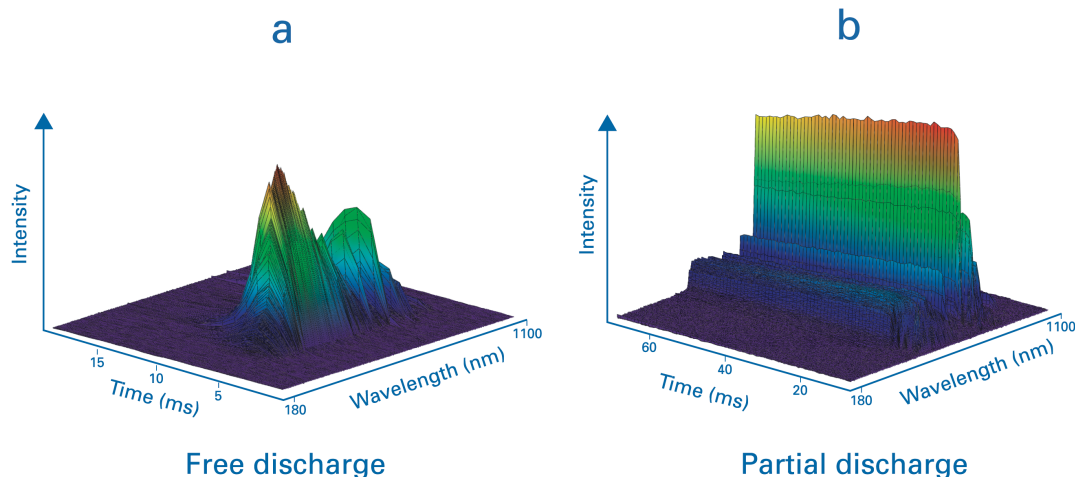
amount of energy required to achieve the necessary temperature profile within the target and accurately control the thermal profile within the skin.

This recent advance in IPL technology has resulted in a significant reduction of the cost, making square pulse, constant spectrum IPL more available to the therapist wishing to practice IPL skin rejuvenation techniques.



**Illustration:** Showing temporal profile of energy output of a traditional and iPulse square pulse IPL

Control over the energy discharge through the Xenon lamp also results in a constant spectral output across the 530 nm – 1200 nm produced by the new iPulse technology. Thus no treatment energy is wasted using 'square pulse' technology and the constant distribution of light ensures a comfortable treatment for the client.



## TRAINING MANUAL

**Description:** Time-resolved spectral measurements of a free discharge IPL (Chromolite, Chromogenex Ltd., Llanelli, UK) compared with a 'Square Pulse' pulse discharge profile of a constant current IPL (iPulse, Cyden Ltd. Swansea, UK). The two measurements show differences in spatial and temporal characteristics of the two types of IPL, confirmed by the "spectral jitter" seen in the short plasma phase of the free discharge IPL during which most of the light energy is released in an invariable 3-4 ms compared with the constant spectral output spread evenly across the entire pulse of the partial discharge IPL with a variable range of pulse durations 10-50 ms.

[Courtesy of: Ash C, Town G and Bjerring P. *Relevance of the structure of time-resolved spectral output to light-tissue interaction using intense pulsed light (IPL)*. Lasers Med Surg 2007: in press]

**Published studies in international peer-reviewed journals confirm that iPulse constant spectrum IPL embodies the latest advances in light technology for safe and effective hair removal and its suitability for all skin types.**

### References:

Clement M, Daniel G & Trelles MA. *Optimising the design of a broad-band light source for the treatment of skin*. Journal of Cosmetic and Laser Therapy. 2005; 7: 177-189.

Omi T and Clement M. *The Use of a Constant Spectrum, Uniform Temporal Profile Intense Pulsed Light Source for Long Term Hair Removal*. Journal of Cosmetic and Laser Therapy 2006; 8: 138-145.

Ash C, Town GA, Martin GR. *Preliminary trial to investigate temperature of the iPulse™ glass transmission block during treatment of Fitzpatrick II, IV, V, and VI skin types*: Lasers Med Sci 2006; 22:1: 4-9.

Town GA, Ash C, Eadie E, Moseley H. *Measuring key parameters of intense pulsed light (IPL) devices*: J Cosmetic Laser Therapy 2007; 9:3:148-160.

Ancona D, Stuve R and Trelles MA. *A multi-centre trial of the epilation efficacy of a new large spot size, constant spectrum emission IPL device*. Journal of Cosmetic and Laser Therapy 2007; 9: 139-147

Ash C, Town G and Bjerring P. *Relevance of the structure of time-resolved spectral output to light-tissue interaction using intense pulsed light (IPL)*. Lasers in Surgery and Medicine 2008; Vol 40:2: 83-92

## FDA CLEARANCE 510k K080406

**iPulse intense pulsed light is indicated for use in Dermatological and Plastic Surgery applications and specifically for long term stable, or permanent, hair reduction. In addition, iPulse is indicated for the treatment of benign cutaneous vascular lesions and the treatment of benign pigmented lesions. iPulse is indicated for the treatment of mild to moderate inflammatory Acne Vulgaris.**

(Latest FDA updated clearance 10th March 2008)

## **BEFORE YOU START USING iPULSE™ IPL**

### **TRAINING**

Whilst the technology has proved its efficacy in long term hair removal through numerous clinical trials, at present, there is little formal training of operators (whether in the beauty or healthcare sector) so results have often been variable. Therefore, training is a key factor in achieving successful treatment outcomes.

As a minimum, all operators should receive basic training in light science and therapy theory and the safe use of laser/IPL devices. No two devices are identical in the way they deliver light energy so it is vital to obtain user training from the supplier. *(Contact your CyDen iPulse representative for training opportunities)*

### **ACCESSORIES**

An IPL treatment room must be fully equipped with all necessary accessories to ensure successful and efficient treatments. In particular, this will include adequate provision of skin cooling by use of refrigerated cooling gel packs, cooled transmission coupling gel, cooling rollers, refrigerated skin air-cooling, Peltier-type contact cooling, etc.

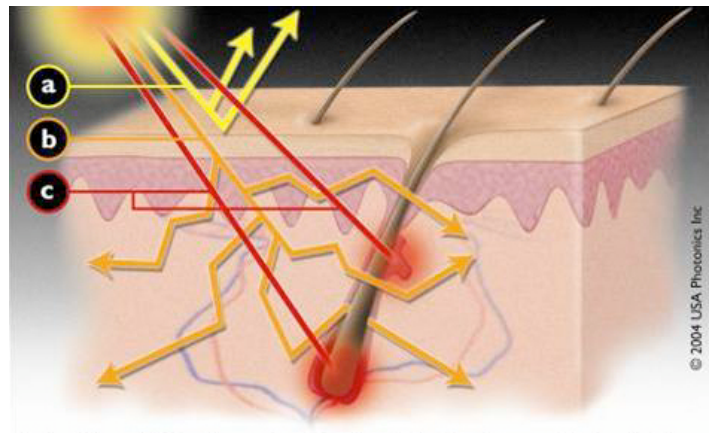
For optimal diagnosis before treatment, operators are encouraged to use advanced skin analysis techniques including detailed evaluation of melanin (skin and hair colour), hydration and lipid levels as well as skin evaluation methods such as skin scanners and photo records. Such records may also be used post-treatment as evidence of efficacy of treatment to reassure the client. *(See separate treatment room set-up information).*

## UNDERSTANDING THE SKIN IN iPULSE HAIR REMOVAL

The skin has three primary targets that absorb light, melanin, blood and water and these are called 'chromophores'. Absorbed light energy is converted into heat energy.

Hair removal using iPulse light therapy consists of creating sufficient heat in the hair follicle to damage the cells that cause hair re-growth. This is achieved by light absorption in the melanin of the hair shaft (absorbing chromophore) and transmission of heat to damage hair growth cells at the periphery of the hair follicle (target chromophore).

The light, which isn't reflected off the skin's surface (a), scatters beneath the skin's surface, (b) is then absorbed in the melanin of the hair follicle and converted into heat energy. By conduction, this heat is transferred to adjacent cells, including those of the papilla, root sheath and the bulge. This absorption of heat causes the surrounding cells to die, and therefore stop the follicle from producing further hairs (c).

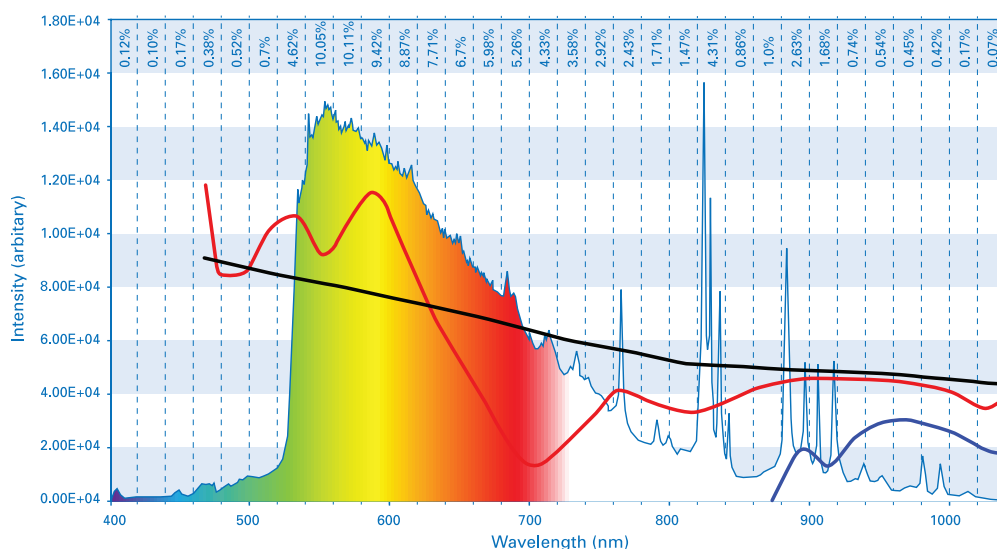


As there is also melanin in the epidermis (giving the skin its natural colour), care must be taken to select appropriate energy levels to induce the desired therapeutic outcome without damaging surrounding normal epidermal tissue. Suntan and fake tan has the same high uptake of light energy as naturally dark skin and light-based hair removal treatments should be delayed until all active tan and fake tan has subsided.

- White or vellus hair will be unaffected by light as it doesn't contain enough melanin to absorb sufficient heat energy to damage the growth cells.
- Darker skin, darker hair and greater hair density will require lower energy levels.
- Lighter skin, lighter hair and thinner hair density will require higher energy levels.

## WAVELENGTH

Illustration: Example standardised spectral distribution of a typical xenon lamp IPL (iPulse, Cyden Ltd) measured in 20 nm bandwidths as a percentage of the total energy beneath the graph curve. Absorption curves for oxyhaemoglobin (red) melanin (black) and water (blue) have been overlaid to reference optimal absorption characteristics.



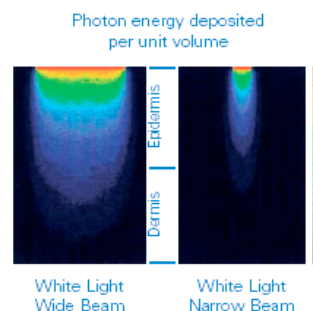
## TRAINING MANUAL

IPL devices produce mostly visible broad-band wavelengths of light. Potentially harmful, short wave UV light (<400 nm) is filtered out by the lamp itself and hardly any long-wave infra-red light is produced by a Xenon lamp. The remaining wavelengths between 530 nm and 1000 nm are all well absorbed by melanin so are suitable for hair removal.

As light scatters as it enters the skin, the longer wavelengths of this broad-band light penetrate more deeply into the skin to reach deeper located hair follicles. The shorter wavelengths of light, which scatter more readily are better absorbed in shallower hair follicles.

### SPOT SIZE

The larger the spot size, the deeper the penetration into skin and the less that energy is lost at the edge of the treatment area. Unlike traditional IPL devices, the iPulse uses twin flash lamps to produce a large, rectangular spot size on skin of 8.9 cm<sup>2</sup>, which ensures that light energy penetrates deeper into tissue to reach the base of the hair follicle. There is therefore no need to overlap spots and the large spot size ensures a faster and more comfortable treatment.



### PULSE DURATION

Generally, the pulse of IPL light used will be longer for thicker hair and shorter for finer hair.

By choosing long pulses of light for hair removal, the operator will also avoid collateral damage to epidermal melanin as the tiny particles of melanin in the skin have time to lose absorbed heat during a long pulse (compared with the much larger hair follicle, which will hold its heat longer). The process of selecting the hair shaft to damage is called “selective photothermolysis” and depends upon the fact that smaller bodies (e.g. epidermal melanin) lose heat faster than larger bodies (e.g. hair follicle) owing to the relative surface area of melanin particles losing heat faster. The correct, long and spectrally constant pulse produced by iPulse ensures that the follicle is fully coagulated and that the growth cells that cause new hairs to re-grow are damaged.

**WARNING! iPulse uses “square pulse” constant spectrum technology and energy density (fluence) levels used with iPulse cannot be compared with other conventional IPL devices.**

### TECHNOLOGY DIFFERENCES

By using iPulse latest square pulse and constant spectral output technology, multiple applicators with different filters are not required and effective treatments can be performed more simply with a single, user-changeable flash lamp.

*(See CyDen iPulse User Manual for technology details)*



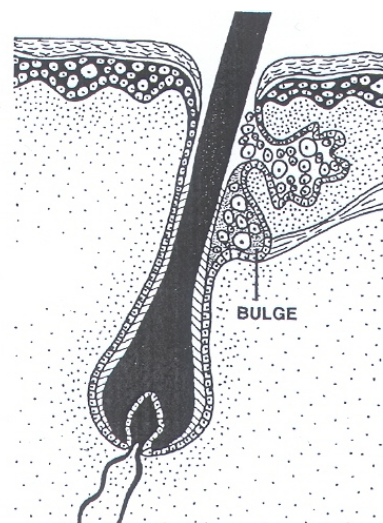
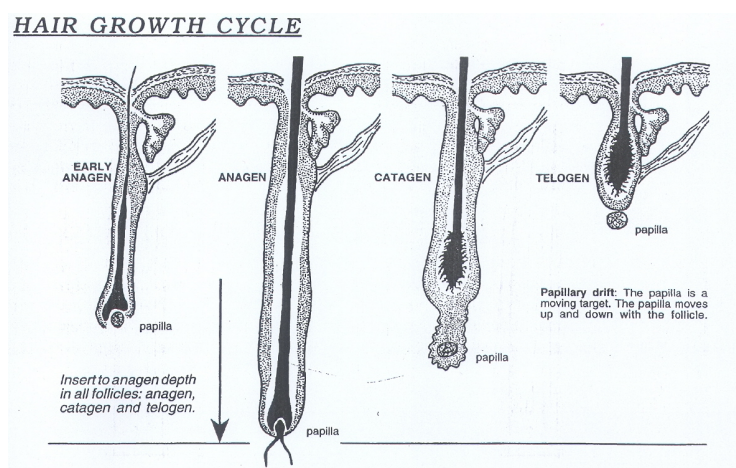
Experience has shown that multiple treatments are required for hair removal. This is due to the nature of the hair growth as hairs do not appear to respond to light-based treatments during the Catagen or Telogen (i.e. resting) phases.



## TREATMENTS: HOW MANY? HOW OFTEN?

Hair grows in a cycle of 3 phases. Anagen phase is the growth phase of the hair. The Catagen phase is a brief portion of the hair growth cycle in which the growth stops. The Telogen phase is the dormant phase of the hair. Hair can only be treated successfully during the ANAGEN phase.

Hairs are not all in the same growth phase at the same time. This is why several treatments are needed.



- An average of 6 to 10 sessions is needed for hair removal treatment in order to treat the whole area (depending on the hair colour, thickness, density, etc).
- 4 to 10 weeks is the gap between sessions depending on the new growth cycle and the body area. (See individual notes by body area).

The initial (“absorbing”) target is the melanin in the terminal hair shaft, which converts absorbed light energy into heat that in turn radiates by thermal conduction throughout the entire follicle and into adjacent tissue where germ cells are located. It is these germ cells, which are believed to be primarily responsible for hair regrowth.

Providing sufficient heat is generated, these cells are damaged or entirely disabled preventing hair from regrowing. Any delayed partial regrowth may be thinner and/or lighter than the original hair that was treated. Hair miniaturisation is frequently observed.

It is important not to promise FULL clearance and typically an average of 75 to 85% clearance is achieved with a very good client satisfaction rate.

## PERMANENT HAIR REDUCTION

Some therapists prefer using the term, “Long Term Hair Removal” rather than “Permanent Hair Reduction”. Hair treatment results can be permanent, however, due to normal or abnormal hormonal fluctuations in the body, some dormant hair growth can be expected.

## SKIN ANALYSIS – FITZPATRICK SKIN TYPING

One of the most important factors in checking what iPulse setting to use for hair removal is the client's skin type. The Fitzpatrick classification is determined by first exposure of the skin to appreciable sun as well as tanning habits and genetic background.

According to Fitzpatrick, the skin can be classified according to 6 skin types:

### **Skin Type I**

Caucasian: Very light complexion, light eyes, freckles, usually blonde or reddish hair color.

### **Skin Type II**

Caucasian: Light complexion, light eyes, occasional to frequent freckles, blonde, reddish, light brown hair color.

### **Skin Type III**

Darker Caucasian, light Asian: Medium complexion, light to dark eyes, hair color usually brown to dark.

### **Skin Type IV**

Mediterranean, Asian, Hispanic: darker complexion, dark eyes, dark brown to black hair color.

### **Skin Type V**

Middle Eastern, Latin American, light-skinned black, Indian: Dark complexion, dark eyes, usually black hair color.

### **Skin Type VI**

Dark-skinned black: Black complexion, black eyes, black hair color.

## REACTION TO FIRST EXPOSURE TO SPRING SUNSHINE - UVA)

- Type I (1) – Very sensitive: Always burns easily, never tans, very fair skin tone
- Type II (2) – Very sensitive: Usually burns easily, tans with difficulty, fair skin tone
- Type III (3) – Sensitive: Burns moderately, tans gradually, fair to medium skin tone
- Type IV (4) – Moderately sensitive: Rarely burns, always tans well, medium skin tone
- Type V (5) – Minimally sensitive: Very rarely burns, tans very easily, olive or dark skin tone
- Type VI (6) – Least sensitive: Never burns, deeply pigmented, very dark skin tone

## PIGMENTATION

None - No Tan or Freckles

Medium - Light tan, light freckles

Heavy - Deep tan, dark freckles, liver marks or birthmarks



## PRE-TREATMENT DOCUMENTATION & ASSESSMENT

Provide the client with written information about the treatment. [See separate client information brochure].

Discuss and complete full client history in private explaining as fully as possible about the treatment and noting any special circumstances applicable to the client. Ask the client about each contraindication individually and mark each one with the client's reply. If the client answers "yes" to any of the listed contraindications, document in full on the consent form. Act on the directions listed for that condition. I.e. ask the client to obtain a doctor's letter on that medical condition in relation to light-based therapy. [See separate Typical Client Consultation Form in iPulse User Manual Appendix].

All questions about the client must be answered in full.

Carefully record reaction to sun exposure (Fitzpatrick Scale), record eye colour and ethnic origin to confirm skin type. If uncertain, treat as for the next darker skin type. Consider performing a full skin analysis using appropriate skin evaluation tools (Wood's Lamp, skin analysers for hydration, lipid level, erythema and melanin).

Answer any questions the client has regarding treatment and make sure the client has **REALISTIC EXPECTATIONS** of the outcome of the treatment.

Ask the client to read, sign and date the General Medical History Questionnaire and Consent to Treatment form if he/she has understood its contents. Counter-sign and date the consent form and give the client a copy if requested.

If the client is suitable for treatment continue with evaluation of test areas to establish predicted treatment parameters. A test area must be performed on or as near as possible to the area to be treated at least 2 to 7 days prior to any course of treatment in lighter skin types.

Skin types IV and V should be tested at least 2 weeks prior to treatment (owing to reports of late emerging side effects).



## CONTRAINDICATIONS

Do not treat anyone who has known or reported the following unless a letter from the client's GP is available confirming that the medical condition(s) will not prevent treatment using intense pulsed light:

- tanned skin (active tan) through sun exposure or tanning bed use in the previous 30 days (because of increased risk of hyper pigmentation)
- waxing, plucking, 'sugaring' or 'threading' depilation treatment of the area in the previous 4 – 6 weeks (because the follicle has been removed)
- moles should not be treated (protect by covering the mole with a white plaster)
- hypo pigmentation (e.g. Vitiligo)
- any inflammatory skin condition e.g. eczema, active Herpes Simplex, etc. at the treatment site (because it may aggravate the condition)
- skin cancer or any other cancer and / or who reports he/she is undertaking any cancer drug therapy (such as Ducabaxine, Flurouracil, Methotrexate, etc.)
- a history of keloid scarring (because any IPL burn may produce a keloid scar)
- epilepsy (because repeated consecutive flashes may induce a fit)
- using St. John's Wort (herbal remedy) in the past 3 months for depression (owing to photosensitivity)
- who has used oral Isotretinoin—Roaccutane or Tretinoin—Retin A in the previous 3 – 6 months for the treatment of acne or other dermatological conditions
- who is pregnant; until periods return and end of breast feeding (because hormonal imbalance may reduce treatment effectiveness)
- who takes drugs for diabetes (owing to possible photosensitivity and poor wound healing)
- taking anti-coagulant drugs (e.g. for heart disease)
- wearing a pacemaker unless the IPL or pacemaker manufacturer confirms in writing that it is safe to treat the client wearing a pacemaker
- taking any topical medication (e.g. hydrocortisone) or is wearing perfumes, deodorants, sun block, essential oils or other skin lotions (which could cause photosensitivity)
- surgical metal pins or plates under the tissue to be treated
- to be under 18 years of age if the establishment is not registered to treat children or if parental permission is withheld.

A doctor's letter should be obtained before treating clients who are reportedly using Quinidine, any anti-psychotic medication or large combinations of cardiac / diuretic drugs, topical steroid creams in the area to be treated, general anaesthesia in the last 3 months, local anaesthetic treated areas in the past month or where you are uncertain about any reported medical condition or medication.

Treat with caution and obtain a doctor's letter if you are uncertain about anyone who has fake tan, suffers with allergies, has hormone abnormalities such as polycystic ovarian syndrome, has cold sores in the treatment area, has had previous depilation treatments or has reported HIV or Hepatitis.

Transsexuals may be treated although results can vary and **iPulse** treatment should follow 6 months after completion of hormone therapy.

Conditions that affect hormone levels such as thyroid conditions, oral steroids, hormonal therapy and polycystic ovaries can be treated but results may vary and clients should be made aware of reduced or delayed realistic outcomes.

[See separate Information on Drug-Induced Photosensitivity in *iPulse User Manual Appendix*].

## **PRE-TREATMENT ADVICE TO CLIENTS**

Clients should be instructed in pre-treatment skin care and should be provided with written take-home instructions recommending:

- Don't expose skin to UV (sun exposure or the use of tanning beds) or self tan for at least 4 weeks before and/or between IPL treatments,
- don't depilate with waxing, plucking or threading (shaving or depilatory creams are acceptable) before and/or between IPL treatments,
- don't use bleaching creams, or perfumed products (e.g. aromatherapy oils) for 24 – 48 hrs before treatment sessions,
- avoid swimming in strong chlorinated water immediately before an IPL treatment session,
- avoid exfoliating, microdermabrasion or peels for 1 week before treatment sessions,
- avoid wearing tight clothing when attending for treatment sessions,
- keep the area clean and dry,
- hydrate the body by drinking plenty of water and
- protect the skin from sun exposure with suitable clothing and use of sun block SPF 30+ before first treatment and between subsequent treatment sessions but do NOT use sun blocking creams within 24hrs of scheduled treatments.

NB. Hot and humid weather conditions can aggravate skin in the period immediately before treatment.

CyDen provides client information sheets on hair removal and Post-treatment Guides for the client to take home.

## THE THERAPEUTIC WINDOW—How to choose your parameters

There are several factors that determine choice of **iPulse** settings. The overall objective is to find the **optimal setting** in the “**therapeutic window**” where energy and pulse duration is sufficient to damage the hair but avoid possible collateral damage to surrounding tissue and consequential undesired side effects.

Finding the optimum setting is determined by the operator following a sequence of steps:

1. Exclude all unsuitable subjects
2. Determine underlying skin type of the client (Fitzpatrick Scale) **AND** the skin type in the area to be treated. This can be assessed by use of different methods including simple evaluation against a chart, Fitzpatrick questionnaires with a numerical scale, skin diagnostic devices which measure melanin and skin redness (skin reflectance spectrometers), etc. A subject's general Fitzpatrick Skin Type is assessed on a body area not normally exposed to the sun as well as the subject's ethnicity and tanning habits. The area to be treated may appear different from the underlying skin type due to sun damage, age or specific local skin tone and must be taken into account.
3. CyDen provides a list of Treatment Program options which allows the operator to select a suitable hair removal program according to Fitzpatrick Skin Type [See *iPulse User Manual* and *this Applications Training Manual*]
4. Undertake **test areas** at several increasing energy density levels until a suitable starting energy level is determined. [See “client preparation”]
5. The starting energy is that which will produce a heat response in the skin, which feels hot or like a prickle to the client but is tolerable. In addition, there may be some development of redness (erythema) in the treated area within a few minutes. If there is a strong histamine-like reaction with swelling immediately around the hair follicles and general ‘raw’ redness around the area, this is the first sign of over-treatment.
6. Normally, the skin will only feel warm temporarily after treatment and any redness will disappear within minutes or a few hours.

NB. Thin skin areas over bone (e.g. shin, ankle, fingers, toes) will not tolerate such high energy levels as thick, muscular or fatty areas. For this reason the available treatment energies in the programs offered include lower fluence values to accommodate such special cases and other types of treatment.

**CAUTION:** The treatment parameters suggested by the manufacturer are those reported by experienced users in published literature or reported directly to the company. However, it is the responsibility of the authorised user to determine safe treatment parameters that will be used on a case-by-case basis.

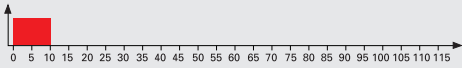
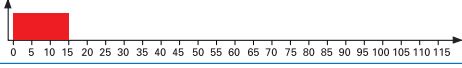
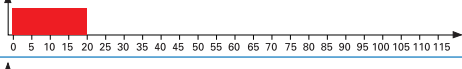
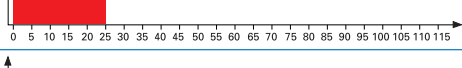
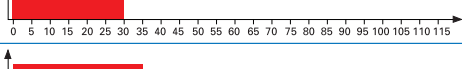
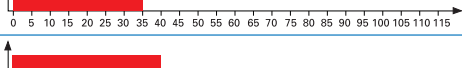
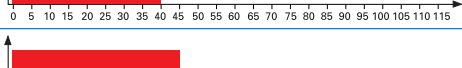
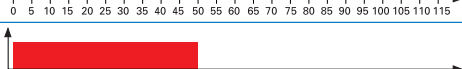
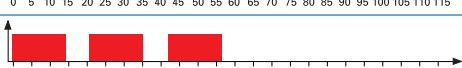
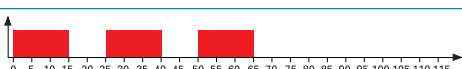
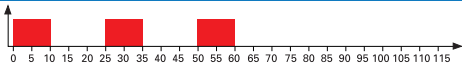
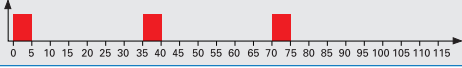
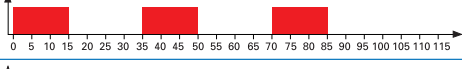
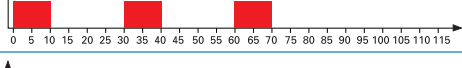
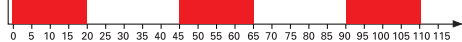

## iPULSE™ TREATMENT PROGRAMS Professional Mode

The iPulse Treatment Programs Chart provides a range of 16 available pulse lengths and energy levels to suit individual client needs. Five programs are reserved for alternative applications.

COLUMN ONE lists the sixteen possible treatment programs including hair treatment programs 4, 5 and 6 for Fitzpatrick Skin Types I – III and programs 10, 12 and 16 for Fitzpatrick Skin Types 4 and 5. The program number corresponds to the fixed pulse length and pulse type (single pulse or triple pulse).

COLUMN TWO gives the fixed length of the pulse (or pulses) and the range of energy settings which can be selected (in 0.5 J/cm<sup>2</sup> increments). As stated in the NB above, the available range of energy settings includes low values for exceptional cases. Typically, starting energies for hair removal will be 9 J/cm<sup>2</sup> or higher.

COLUMN THREE simply illustrates the pulse type (single or triple) against a millisecond scale but not the range of energy available.

Program Number	Pulse Specification	Pulse Structure
1	Single Pulse 10 msec 2 – 9 J/cm <sup>2</sup>	
2	Single Pulse 15 msec 3 – 12 J/cm <sup>2</sup>	
3	Single Pulse 20 msec 4 – 15 J/cm <sup>2</sup>	
4	Single Pulse 25 msec 5 – 17 J/cm <sup>2</sup>	
5	Single Pulse 30 msec 6 – 19 J/cm <sup>2</sup>	
6	Single Pulse 35 msec 6 – 19.5 J/cm <sup>2</sup>	
7	Single Pulse 40 msec 7 – 20 J/cm <sup>2</sup>	
8	Single Pulse 45 msec 7 – 20 J/cm <sup>2</sup>	
9	Single Pulse 50 msec 8 – 20 J/cm <sup>2</sup>	
10	Multiple Pulse 14 msec ON : 7 msec OFF 7 – 20 J/cm <sup>2</sup>	
11	Multiple Pulse 15 msec ON : 10 msec OFF 7 – 20 J/cm <sup>2</sup>	
12	Multiple Pulse 10 msec ON : 15 msec OFF 6 – 18.5 J/cm <sup>2</sup>	
13	Multiple Pulse 5 msec ON : 30 msec OFF 3 – 12 J/cm <sup>2</sup>	
14	Multiple Pulse 15 msec ON : 20 msec OFF 7 – 20 J/cm <sup>2</sup>	
15	Multiple Pulse 10 msec ON : 20 msec OFF 6 – 18.5 J/cm <sup>2</sup>	
16	Multiple Pulse 20 msec ON : 25 msec OFF 8 – 20 J/cm <sup>2</sup>	

## iPULSE™ TYPICAL TREATMENT PARAMETERS—HAIR REMOVAL

An average of 6 to 10 sessions is needed for hair removal treatment (depending on the hair colour, thickness, density, etc). 4 to 10 weeks is the gap between sessions depending on the new growth cycle and the body area.

### Light Skin

<b>Light Skin—Types 1 to 3</b>
Single Pulse Programmes 4 to 7
Available Treatment Energy 5 to 19.5 J/cm <sup>2</sup>
Typical Treatment Energy 12 to 16 J/cm <sup>2</sup>

Clinical data has shown that for lighter skin types (Fitzpatrick 1 to 3) single pulses of 25 to 40msec (Programs 4 to 7) with energy ranges of 12 to 16 J/cm<sup>2</sup> have proven to be effective.

Fitzpatrick skin type	Hair thickness	Program	Joules/cm <sup>2</sup>
1	Thin	4	12 – 16
1	Medium	5	12 – 16
1	Thick	6	12 – 16
2	Thin	4	12 – 16
2	Medium	5	12 – 16
2	Thick	6	12 – 16
3	Thin	5	12 – 16
3	Medium	6	12 – 16
3	Thick	7	12 – 16

## Dark skin

<b>Dark Skin—Types 4 &amp; 5</b>
Multiple Pulse Programmes 10,12 & 15
Available Treatment Energy 6.5 to 20 J/cm <sup>2</sup>
Typical Treatment Energy 10 to 14 J/cm <sup>2</sup>

Darker skin can react to light treatment by hyper- or hypo-pigmenting so it is best treated with a longer pulse width (time span) to spread out the energy and make the treatment safer and more comfortable. This means either using a higher number program in the single shot section (e.g. program 8) or go to multi-pulsing (e.g. program 10, 12 or 15).

As the skin colour darkens, the energy range should stay in the same region however triple pulses should be used to allow inter-pulse epidermal cooling. Programs 10, 12 and 15 should be utilised for skin types 4 to 5.

For East Asian skin types, Programs 5 to 7 have been shown to be effective with energy ranges of 10 to 13 J/cm<sup>2</sup>.

Darker Asian, African and Afro-Caribbean skin types (e.g. South Indian) will require greater caution and lower fluences.

The modified values shown in these charts for darker skin types is based upon clinical experience on Indian skin types (Fitzpatrick 4 and 5) by Dr. Maya Vedamurthy in Chennai, India in a study including 53 patients and 89 treatment sites for hair removal where the average energy density used was in the range of 10-14 J/cm<sup>2</sup> and the Programs used were typically 15, 12 and 10 – all triple-pulse programmes.

<b>Fitzpatrick skin type</b>	<b>Hair thickness</b>	<b>Program</b>	<b>Joules/cm<sup>2</sup></b>
4	Thin	12	10 – 14
4	Medium	12	10 – 14
4	Thick	10	10 – 14
5	Thin	15	10 – 14
5	Medium	15	10 – 14
5	Thick	15	10 – 14
6	n/a	n/a	n/a
6	n/a	n/a	n/a
6	n/a	n/a	n/a



## TEST PATCH – Establishing the optimum starting energy level

**Test areas are required and are described in detail in the following section in order to establish the best starting energy level and to reduce the risk of unwanted side effects from over-treatment.**

The following points should be observed when performing test areas:

- To be carried out on all patients before a full treatment commences
- The area to be treated needs to be clean, free of cosmetics and creams
- Only a small area (3 or 4 shots in darker skin types, a few more in fair skinned patients) should be treated. If possible this should be in an area that is not too obvious but representative of the proposed treatment area
- Usually 3 settings are required
- Patient, operator and anyone else in the treatment room must wear appropriate IPL safety eye-wear before treatment commences
- The applicator's contact crystal (light guide) must be held flat on the surface being treated with the contact crystal firmly touching the skin tissue

It is normal for the client to experience at least a sensation of warmth or heat during each shot or a 'ping' like the flick of a rubber band on the skin. It is recommended that test-areas be evaluated on or near the treatment site using the lowest recommended fluence for the skin type, increasing the fluence if necessary until the client feels a 'ping', heat or mild discomfort (according to the individual's pain tolerance). Assess the immediate response and record the treatment parameters in the client record. If in any doubt, do not perform a treatment.

When performing the first test area on a new client you have only 1 – 3 chances to establish the energy level.

**On lighter skin (Types I/III)**, start with one shot at the lowest energy level predicted by skin type, then one shot 1 J/cm<sup>2</sup> above the lowest predicted energy level and lastly 2 J/cm<sup>2</sup> higher than the lowest predicted energy level to evaluate tissue response.

Example: According to "Typical Treatment Parameters" (section above) a Skin Type 2 with hair of medium thickness would need Program 5 predicting a start energy of 12.0 J/cm<sup>2</sup> so, you choose energy levels: 12.0 J/cm<sup>2</sup>, 13.0 J/cm<sup>2</sup> and 14.0 J/cm<sup>2</sup> for the test area.

**On darker skin (Types IV/V)**, start with one shot 0.5 J/cm<sup>2</sup> below the lowest energy level predicted by skin type, then one shot at the lowest predicted energy level and then one shot 0.5 J/cm<sup>2</sup> above the lowest predicted energy level to evaluate tissue response.

Example: According to "Typical Treatment Parameters" (section above) a Skin Type IV with thick hair would need Program 10 predicting a start energy of 10.0 J/cm<sup>2</sup> so, you choose energy levels: 9.5 J/cm<sup>2</sup>, 10.0 J/cm<sup>2</sup> and 10.5 J/cm<sup>2</sup> for the test area.

The choice to go higher with the second and third test shots will be based upon a number of factors including, whether the client experienced the sensation of a 'ping' or heat, if the area in question is without doubt not tanned (e.g. bikini line or underarm) and if you have treated the client previously and have experience with their skin response to treatment in other body areas.

**Test area treatment should be ceased immediately if side effects occur**

Patients must be given clear instructions on post IPL skin care, in particular sun avoidance and avoidance of injury to the skin.

Details of the treatment performed including treatment area, IPL type, program, pulse width, fluence and number of shots should be accurately recorded in the client's record. The entry should be signed, timed and dated. The IPL treatment register (log book) must be completed recording treatment in the same way.

**With Skin Types I/III ask the client to return in 2 – 7 days for final evaluation and treatment.**

**Skin Types IV/V should wait for 14 days to be sure of no late emerging side effects.**

## HOW TO PERFORM TREATMENTS USING iPULSE™

### TREATMENT ROOM SET-UP CHECK LIST

1. Make sure any required IPL hazard warning notices are in place at entrances
2. Close window blinds and cover any mirror surfaces to reduce reflection hazard
3. Check fire extinguisher location (suitable for electrical fires)
4. Make sure all Local Rules, Treatment Protocols and client documentation is available for reference.
5. Check availability of all required supplies: couch roll, razors, gloves, tissues, refrigerated clear ultrasound gel, wooden spatulas, skin cooling gel packs, white marker pencils, wipes, post-treatment skin calming lotion (eg aloe vera), etc.
6. Close the entrance door to prevent unauthorized entry and to protect the privacy and dignity of the client by suitable means e.g. use towels during intimate area treatment, eye safety, etc.
7. Check ventilation (extractor fan, air conditioning, etc).

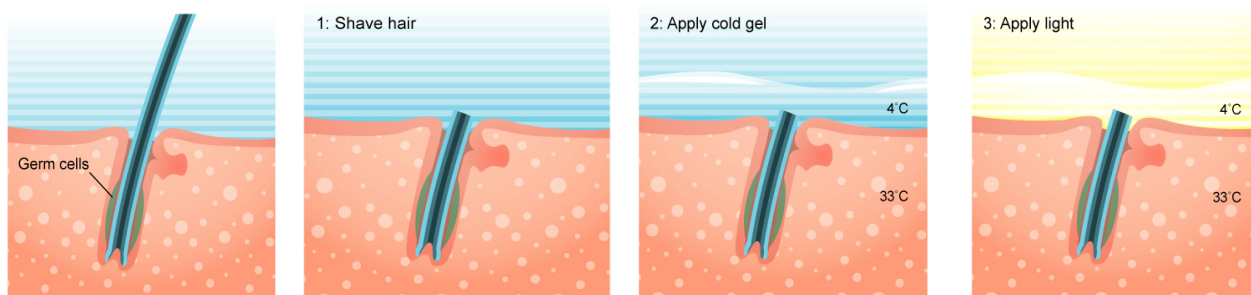
*[Contact your Laser Protection Advisor for further assistance on safety issues]*

### CLIENT PREPARATION CHECK LIST



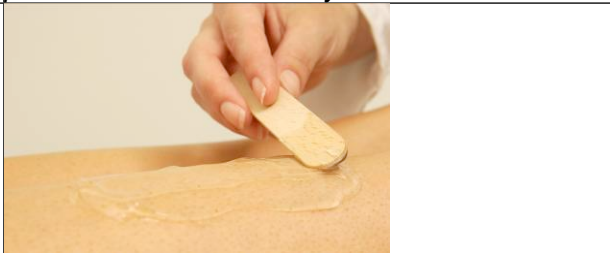
1. Ensure all patient questionnaires (general medical history) and consent forms are completed and signed by the client and the operator. Consent Forms should ideally be signed each time before an IPL treatment. *[See separate sheets]*
2. Ask client to remove all jewellery, make up, deodorant, etc in the treatment area.
3. The treatment area (or test area) should be shaved before treatment. NB. The client should attend with unwanted hair present (at least stubble a few mm long) so that the operator can check hair thickness and colour at the treatment site accurately.
4. Remove any loose hairs (from shaving) using gauze or adhesive tape (as hair left on the skin surface will absorb iPulse IPL energy first).
5. The area should be cleaned with water only; any creams may leave a residue, which could affect the efficiency of the treatment.
6. Mark the extent of the skin area to be treated with a white eye liner pencil.
7. In the area to be treated, 'white-out' small lesions, moles, etc and cover any sensitive areas (tattoos, lips, etc) with cut-out adhesive white labels to protect them from absorbing light energy.
8. Give the client and any assistant or observer present in the room suitable protective safety glasses.
9. Close-fitting reusable metal or disposable adhesive ocular shields should be placed over the eyes of the client if treating facial areas near to the eyes where safety glasses would allow light penetration under the rim.
10. Set up the iPulse program and predicted energy setting (based on skin type, hair density, etc).
11. Cool the area with a cold pack if required (e.g. sensitive or dark skin).

## TRAINING MANUAL

12. Either dispense sufficient ultrasound gel into a small container or deposit 'blobs' of **clear** ultrasound gel directly onto the skin from the dispenser bottle and using a clean wooden spatula, spread a layer of gel over the skin approximately 2 – 3 mm thick. The gel must be kept cold (but not frozen) in a fridge.
13. Do not 'overwork' the gel on the skin, as it will heat up. Do not reuse the gel (infection risk)
14. The operator must wear suitable safety glasses during iPulse treatment and "blink" during the flash to limit light entering the operator's eyes and thereby improve visibility of the treatment area after the flash.






## The hair removal treatment sequence

		
<i>Use refrigerated cooling gel packs for sensitive or darker skin types</i>		<i>Mark the skin with gridlines to assist with accurate placement of the contact crystal</i>
		
<i>Dispense cooled gel and apply with a wooden spatula</i>		<i>Apply a layer of gel 2-3 mm thick</i>

## USE OF iPULSE APPLICATOR CHECK LIST:

1. Place the light guide (crystal) flat to the skin touching the surface of the skin.
2. The light guide is pressed into the ultrasound gel.
3. Firm pressure should be used when treating hair with the contact crystal to bring the hair shaft closer to the light source and improve absorption in the hair.
4. Treatment spots are placed directly next to one another with minimal overlap.
5. Make sure there are no gaps between the treatment spots.

The light guide will leave a track or mark in the gel, which will help show where you have treated.

			
<i>Press the light guide firmly into the clear ultrasound gel</i>		<i>The light guide will leave a 'footprint' in the gel</i>	
			
<i>Cover any sensitive areas (tattoos, lips, etc) with cut-out adhesive white labels, white 'Fibrella' cloth or a spatula to protect them from absorbing light energy.</i>			

## BEWARE IF:

1. The skin is treated without gel (more absorption in the epidermis on dry skin areas).
2. The light guide overlaps a previous treated area (over-treatment risk).
3. The light guide treats skin without hair (no effect), over tattoos or tanned skin (over-treatment risk).
4. The light guide leans to one side (insufficient energy delivered to the target).
5. Part of the light guide is not in contact with the skin (insufficient energy delivered to the target).

## PRACTICAL POSITIONING TIPS FOR HAIR REMOVAL

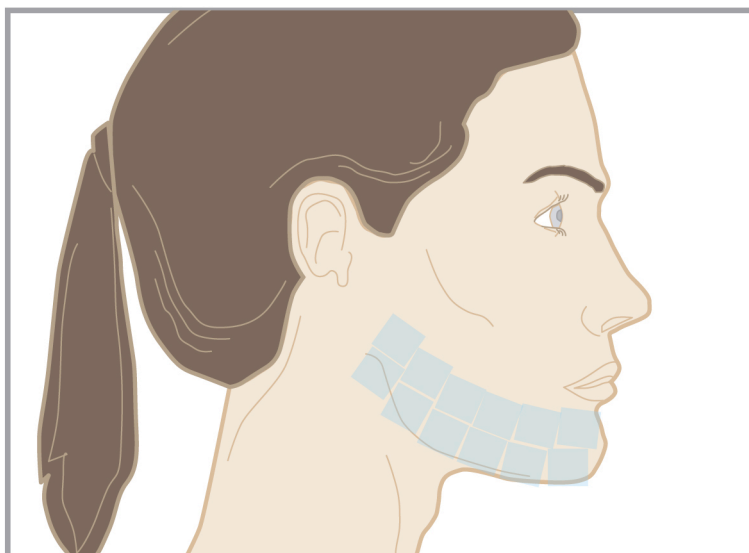
All areas of the body can be treated except inside the orbit of the eye (e.g. underneath the eyebrows) or on mucous membranes (e.g. inside nostrils, ears, etc.) as follows:

### Facial area

Make a line of treatment spots down the face along the jaw line and add rows above as necessary where hair removal is needed until all required cheek areas are covered.

Pay particular attention to the following points:

1. Avoid accidentally treating the scalp hair.
2. Do not promise long term hair reduction on vellus or accelerated (long) vellus hair.
3. Remember the hair growth you see may be hormonal and can take many sessions to control.
4. Use a piece of white 'Fibrella' cloth, white card or white adhesive label to shield areas if required.

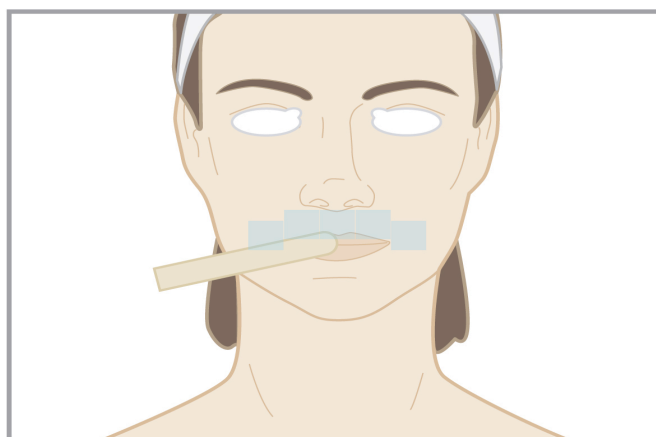


**Gap between treatments: 4 weeks. Number of sessions: typically 8-10.**

### Upper lip

When treating hair on the upper lip (moustache area), remember that the central area below the nostrils (nasal alia) is particularly sensitive. Mostly the upper lip area can be treated with 2-3 shots (depending on spot size) but an extra shot may be needed at each corner of the mouth (just above and lateral to the lip commissure) where additional hair growth is often found.

1. Remember to remove all lip gloss, lip salve or make up.
2. Apply white pencil to mask any semi permanent lip liner on the lip margin.
3. Shield the lips with damp cotton wool or white adhesive label before treating.
4. Use gel sparingly as it can easily obstruct the nostrils, which is unpleasant for the client.



**Gap between treatments: 4 weeks. Number of sessions: from 10 sessions.**



### Chin area

Hair growth under the chin (sub mental area) can be dense and coarse and care should be taken with fluence settings.

1. Reduce fluence over the bone.
2. Perform test areas under the chin if possible.
3. Change positioning depending on the shape of the chin.
4. Press light guide firmly to bring the light energy closer to deep follicles.



5. Avoid over-treating the lower third of the neck which does not heal easily.

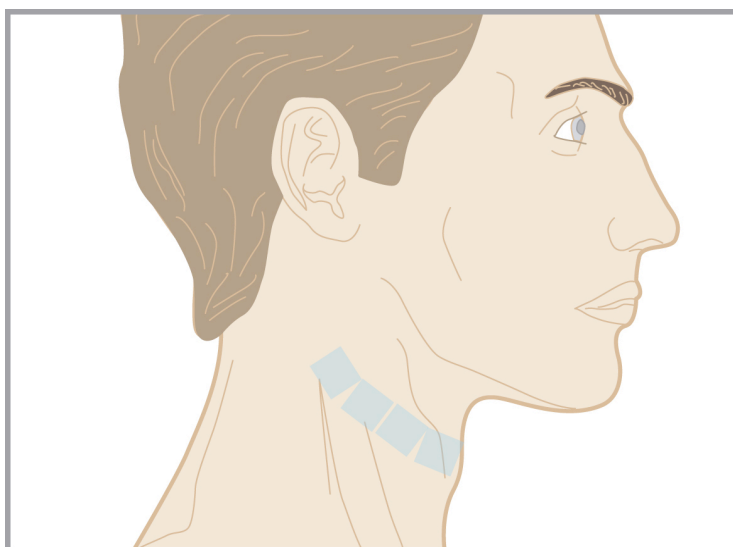
**Gap between treatments: 4 weeks. Number of sessions: typically 8-10.**

### Male beards

Most typically, men request beard re-shaping to reduce hair growth on the lower third of the neck where shirt collars rub and leads to soreness following shaving and in-growing hairs and inflamed/infected hair follicles (pseudo-folliculitis barbae—PFB). Care should be taken on the lower third of the neck because this area is delicate and does not heal as well as facial areas if over-treated. Also, first treatments of the beard in this area should be cautious as there may be a lot of hair, which means a lot of melanin and consequently a lot of heat / discomfort generated in the IPL treatment. It is one of the areas where the use of reusable cooling gel packs (kept in the fridge—not frozen) can be helpful both for about a minute or two before treatment (to reduce level of discomfort) and afterwards to draw out heat from the area and reduce inflammation. Post treatment application of Aloe Vera or other calming lotion is desirable. Results of treatment can be excellent in this area and much appreciated by the client.

"Spot" clearing of hair on the upper cheeks can also be undertaken but full clearance of the beard is not advisable except in gender reassignment cases ("he to she") since complete removal of the beard changes facial masculinity characteristics and makes the face look more feminine. Complete loss of male facial hair can also result in certain premature ageing characteristics emerging (as occurs in women) such as upper lip "whistle lines". White hair in older males usually needs some additional electrolysis treatment to remove these resistant hairs completely.

**Gap between treatments: 4 weeks. Number of sessions: typically 8-10 (full beard removal will 15+ sessions).**



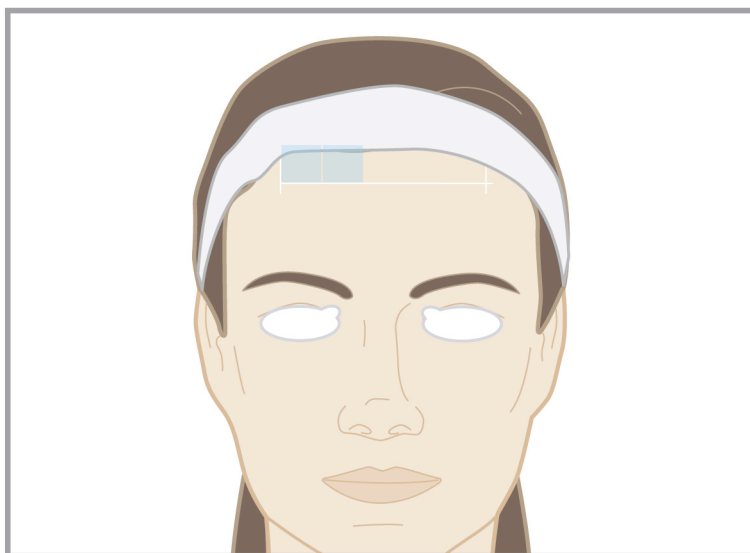
### Hairline

The hairline has a high percentage of Anagen hairs and therefore may be treated every 4 weeks or less. Remember to cover the rest of the hair with a white headband / towel to protect follicles along the hairline.

1. Use a mirror with your client before treatment so you can discuss areas precisely
2. Remember to reduce the fluence over the bone

Try not to overlap.

**Gap between treatments: 4 weeks. Number of sessions: typically from 8 sessions.**

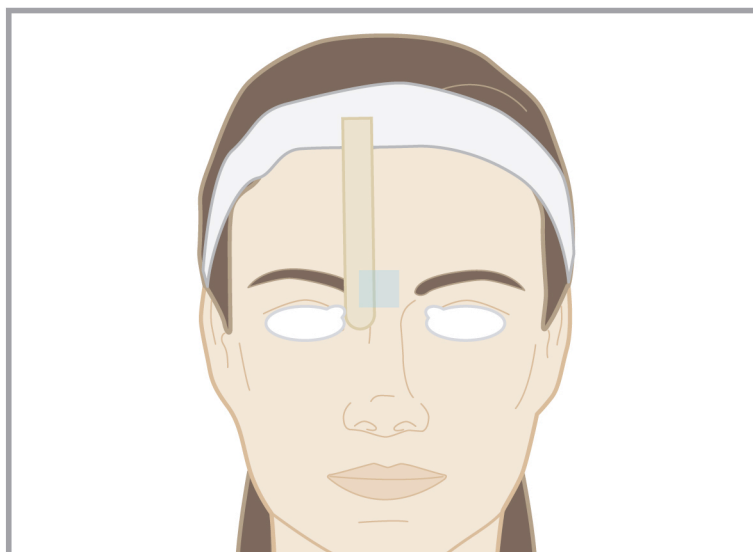


### **Middlebrow**

The hair between the eyebrows should be treated with caution. Particular care should be taken at the edge of eyebrows where angled growth of hair follicles may lead to unwanted reduction. Where space is insufficient for the size of the crystal block, it may be necessary to shield the rest of the eyebrows with white self-adhesive labels.

1. Place opaque eye-shields or cotton wool pads over the eyes
2. Apply sufficient cooling gel.
3. Use a single shot only.
4. Avoid treating eyebrows for 'shaping' reasons as the hairline may appear permanently notched or broken following treatment as precise hair follicle position in the eyebrows is difficult to determine.

**Gap between treatments: 4 weeks. Number of sessions: typically 8-10.**



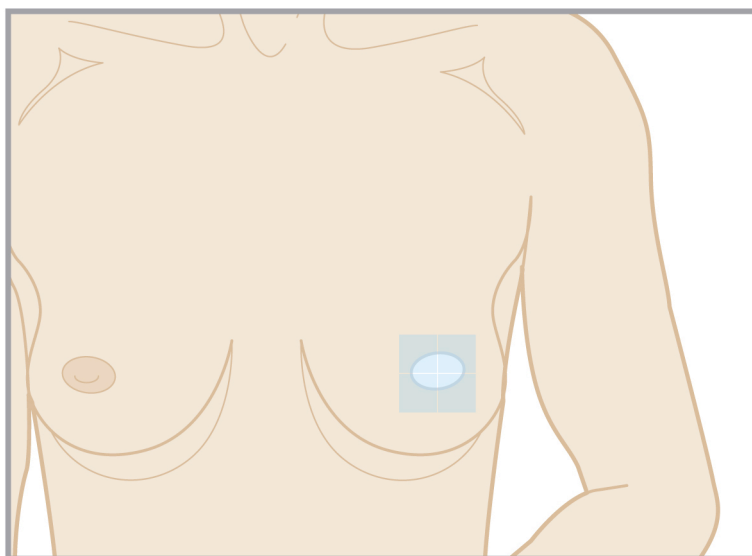
### **Bust and décolleté**

Unwanted hair growth in female clients can occur in the centre of the chest (between the breasts) and this can be treated easily taking care with energy settings as the chest bone (sternum) is close to the body surface in this area and may be sensitive. Moreover, the décolleté is often tanned and sun-damaged and does not heal easily if over-treated, therefore, treat with caution, starting with lower fluence levels.

More commonly, unwanted hair appears around the periphery of the areola, which may be treated as follows:

1. Cover up the red (areola) nipple area using shields, 'Fibrella' cut-outs, white adhesive labels or damp cotton wool / gauze.
2. Do not treat over the darker areola skin as more energy will be absorbed here.
3. With the nipple safely protected, the whole area may be treated in rows (over the protective shielding) to ensure that all the hairs at the margin of the areola are treated.

**Gap between treatments: 4 weeks. Number of sessions: typically 8-10.**



### Male chest

Unwanted chest hair growth in male clients can be treated easily taking care with energy settings as the chest bone (sternum) is close to the body surface in this area and may be sensitive.

1. Mark gridlines to give sub-divided areas of treatable size using a white pencil.
2. Reduce the fluence over bone or dense hair, use cooling packs.

**Gap between treatments: 4 weeks. Number of sessions: typically 8-10.**

### Abdomen

Unwanted body hair often appears on the lower abdomen, usually concentrated along a line from the navel to the pubis.

1. Do not treat over any jewellery (to avoid focussing energy inadvertently).
2. Treat in rows from the navel to the top of the bikini line (pubis)

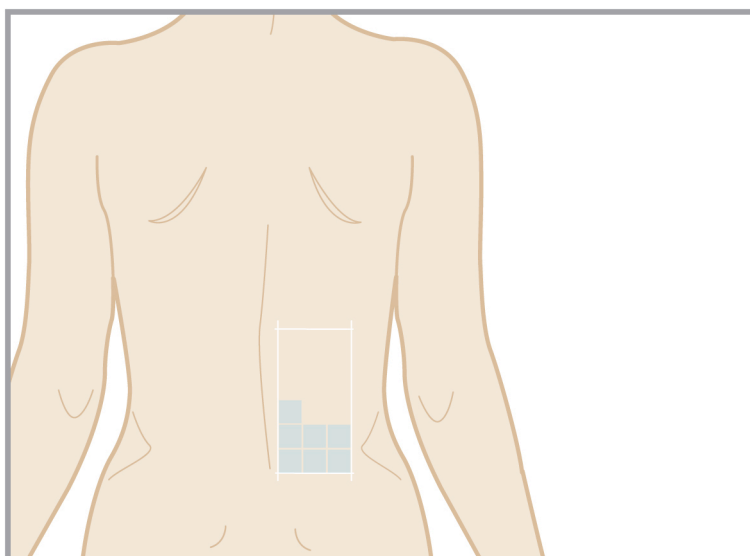
**Gap between treatments: 4 weeks. Number of sessions: typically 8-10.**



## **Backs**

Male and female backs should be marked with gridlines using a white pencil. Only work in “zones” to avoid gel warming up too much in areas waiting to be treated. Take care when treating over bony areas (spine and scapula).

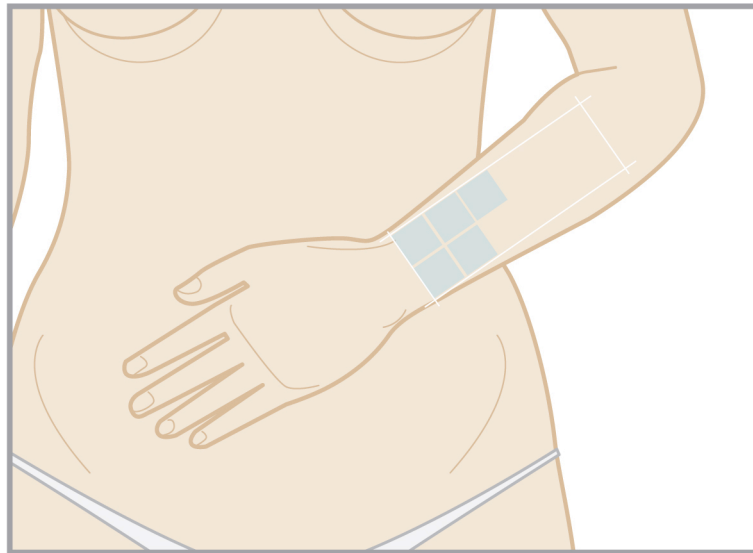
**Gap between treatments: 4 weeks. Number of sessions: typically from 10 sessions.**





## Arms

1. Mark out the sub-divided area to be treated using a white pencil.
2. It is preferable to treat around sections of the arm rather than along the length of the arm. If required you can treat around the elbow or wrist.

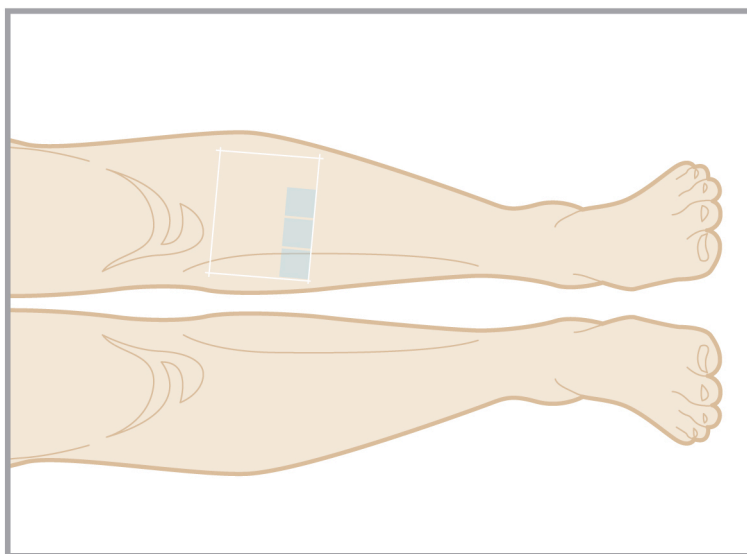


**Gap between treatments: 4 weeks. Number of sessions: typically from 8 sessions.**

## Half legs

It is usually easier to treat around the leg than along the length of the leg.

1. Section off the leg in rectangular gridlines using a white pencil.
2. On the shin and ankle reduce the fluence because of sensitivity caused by proximity to bony areas! It can be painful, especially the ankle.
3. Remember the client will have to move several times to allow the operator access to all aspects of the legs.



**Gap between treatments: 6 weeks. Number of sessions: typically from 8 sessions.**

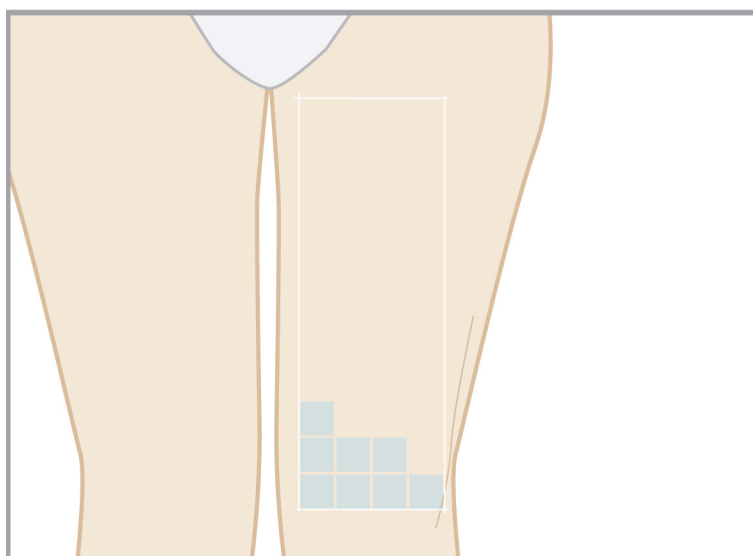
### Knees

1. Obviously, treat with the knee flat i.e. with the leg out straight—not bent.
2. Adapt the light guide to the shape of the knee.
3. If the knee is bony treat at lower fluence as for shin and ankle setting.

**Gap between treatments: 6 weeks. Number of sessions: typically from 8 sessions.**

### Upper legs

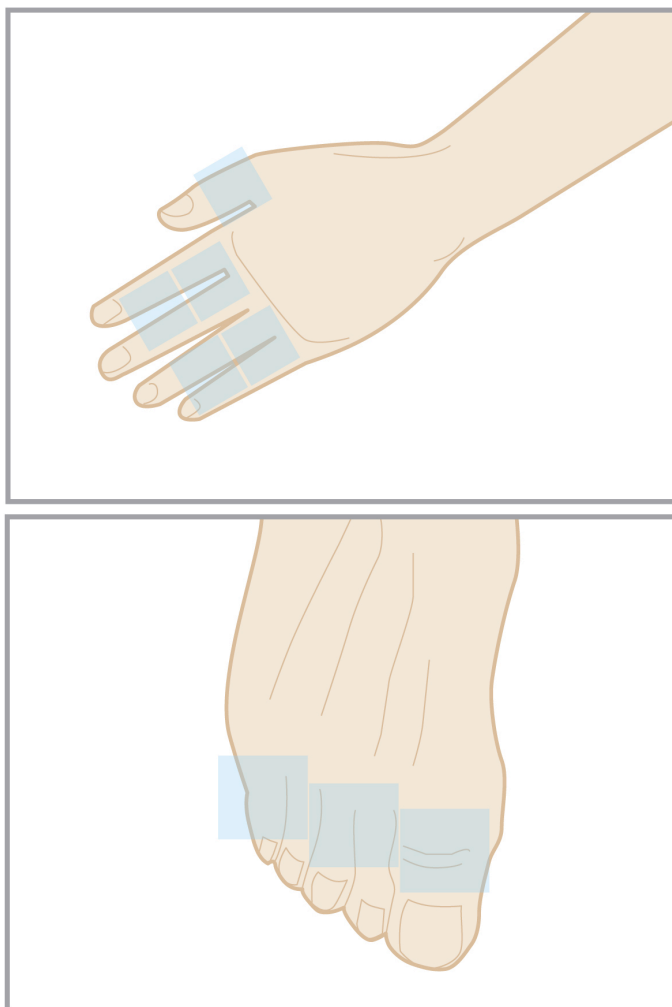
1. Mark out the legs in sections with gridlines using a white pencil.
2. Treating large areas like the upper leg / thigh can be stressful and tiring for the client.
3. Cool the areas in sections and change the cooling gel periodically. (approximately every 30 flashes) to avoid excessive heat build-up.



**Gap between treatments: 6 weeks. Number of sessions: typically from 8 sessions.**

### Toes and fingers

Every client is a different shape; adjust the position of the light guide to suite the shape of the client's treatment area. It is possible to treat two adjacent digits with a single flash.

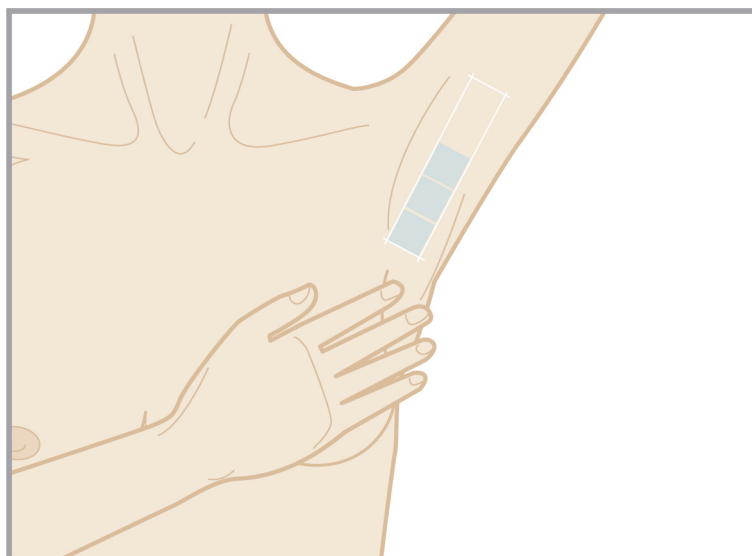


**Gap between treatments: 4 weeks. Number of sessions: typically from 8 sessions.**

## **Underarms**

This is probably the easiest area to start with and to learn iPulse use. However, some parts of the underarm can be very sensitive (especially in the centre where hair growth is thickest) so start at the farthest hairs out on the arm (towards the elbow) and move steadily towards the breast telling the client it will get more sensitive towards the middle of the treatment. A single row of 4 – 5 shots is usually sufficient on most clients.

**Gap between treatments: 4 weeks. Number of sessions: typically 6-8 sessions.**



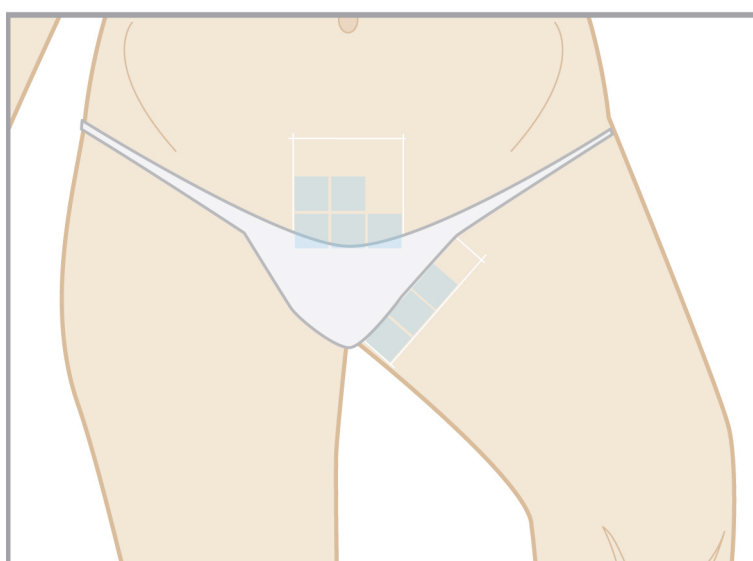
## Bikini line

There are three different types: “Bikini”, “Extended” and “G-String”. The simplest is the Bikini, which follows the line of the underwear (beware—only treat with white lingerie), which is usually described as the “upper groin” area. The “Extended” bikini line refers either to the inner groin area or front of thighs. “G-String” describes an area including the natal cleft (area around but not including the anus).

Only experienced therapists should attempt these treatments with IPL.

1. Clients should be provided with disposable, white cotton g-strings. On no account treat over dark coloured underwear as it will absorb IPL energy.
2. Start from the least sensitive and lightest area of the groin at an appropriate fluence for the skin colour (see Treatment Parameters). It is recommended to treat both upper groin areas before moving on to the next area as the machine settings will usually be similar.
3. When treating the Extended bikini line, it will normally be necessary to adjust the parameters to accommodate the darker pigment in this area. Again treat both areas at the same time. Finally, for the G-String, particular care should be taken to further reduce fluence where necessary and avoid treating the mucous membrane of the anal area directly.
4. In males, treating the penis should be avoided.

**Gap between treatments: 4 weeks. Number of sessions: typically from 8 sessions.**





### Intimate body areas—treatment procedures

If you are requested to do treatments on clients wishing to have intimate areas treated, male or female, these are the following procedures you should consider:

1. It is optional; if you not wish to do this treatment, don't.
2. Another member of staff may be present for additional personal security.
3. Always respect the privacy and dignity of the client.
4. More cooling gel than normal should be applied to delicate areas.
5. Cooling should be extended for delicate areas.
6. Do not book the client in for further treatments if there is any vulgarity.
7. You may consider charging higher fees for intimate areas.

## **AFTER USING iPULSE™ APPLICATOR**

1. Ensure that the skin area is completely treated (no obvious gaps)
2. Put the iPulse into STANDBY
3. Remove safety eye wear
4. Once the area has been treated, remove the ultrasound gel using a spatula and then tissues
5. Check the area for redness and record in client notes
6. Apply a cooling gel pack to any sensitive areas if required
7. Apply a calming lotion such as Aloe Vera
8. Complete the client treatment notes and record any unusual occurrence
9. Provide post-treatment advice and take-home information sheet
10. Book your client's next treatment
11. Switch-off the iPulse, clean the crystal treatment guide with a moist tissue or an isopropyl wipe and prepare the room for the next client.

## **REMEMBER YOUR CLIENT'S TREATMENT TIME INCLUDES:**

### Meeting and greeting

- Providing required information / answering questions
- Preparation of treatment area / applying pre-cooling gel
- The treatment
- Post-cooling / use of soothing lotion or gel
- Completing client record and rebooking the next appointment
- Providing client with take-home instructions sheet

NB: Clients frequently lose take-home information. It is advisable to ask clients to sign a note that they have received return home-care instructions. This may be included in the consent form or general client questionnaire.



## RECOGNITION OF TREATMENT RELATED PROBLEMS

Normally, the skin will be no more than temporarily red and feel warm after treatment which disappears within minutes or a few hours—at the most 24 hours.

Improper use of the iPulse system could result in possible side effects. Although these effects are rare and expected to be transient, any serious adverse reaction should be reported to the client's own doctor. Side effects may be immediate or appear shortly post treatment (0 – 24 hrs); in rare cases, there may be late emerging side effects (typically 24 – 72 hrs) and include:

### IMMEDIATE

- Excessive pain: Stop treatment, cool the skin and moisturise. Review after 24hrs and re-start treatments at lower fluence. (Most common reasons: tanned skin, stress, menstruation and tiredness).

### POST TREATMENT

- Excessive persistent heat and redness: Normally resolves in 24 hrs. If a burn-associated reaction is expected, a one-time application of a local steroid ointment may be indicated (medical prescription). Cool the area regularly using cloth-wrapped ice packs or cooling gel and advise client to use pure Aloe Vera and skin protection as for mild sunburn until the sensation disappears. If the reaction persists the client should consult his/her doctor.
- Damage to natural skin texture (crust, blister, burn): Cool area thoroughly for pain relief, if already blistered or burnt, recommend burn sprays and creams from the pharmacy. Consult doctor and follow adverse incident procedure.
- Excessive swelling (oedema), fragile skin, bruising (purpura): Cool area for immediate pain relief; Consult his/her doctor and follow *Adverse Incident Procedure* (see below).

### LATE EMERGING

- Change of pigmentation (hyper- and hypo-pigmentation): Moisturise and protect from sun exposure and further skin insult (i.e. leave alone and do not rub), consult his/her operator and doctor if condition persists.
- Excessive hypo-pigmentation or scarring: Consult doctor and follow adverse incident procedure. Avoid sun exposure and use a sun block for six months.
- Prolonged itching on the treatment area: Keep the area cool and apply pure Aloe Vera gel. If itching persists the client should consult his/her doctor.
- Ineffective hair removal: Reassess client history and increase fluence depending on skin reaction.
- Leucotrichia: Temporary appearance of pigment-free hair. May often be confused with pre-existing but previously unnoticed white hair.
- Temporary increase in hair growth particularly at the margins of the treated area (may be related to under-treatment where the energy is lower).

NB. Only retreat an area where any problems or responses have healed fully and always repeat testing.

## **POST-TREATMENT CARE**

Clients should be instructed in post-treatment skin care and should be provided with written take-home instructions recommending:

- Don't expose skin to UV (sun exposure or the use of tanning beds) or self tan for at least 2 weeks,
- don't shave for 48 – 72 hrs after treatment
- don't depilate between iPulse treatments (with waxing, plucking, threading or creams) unless advised by the operator to do so,
- don't use bleaching creams, or perfumed products for 24 – 48 hrs,
- don't pick or scratch the treated area,
- avoid rough handling of the area treated,
- leave any skin responses alone, these are temporary and will subside,
- avoid very hot baths / showers / steam baths / sauna for 1 week,
- avoid swimming in strong chlorinated water for 1 week,
- avoid exfoliating or peels for 1 week,
- avoid rough sports for 24 – 48 hrs,
- avoid wearing tight clothing,
- keep the area clean and dry,
- hydrate the body by drinking plenty of water and
- use of sun block min SPF 30+ and consider using protective cotton gloves for driving, a hat to protect facial areas and pants to protect legs from the sun.

NB. Hot and humid weather conditions can aggravate skin in the period immediately following treatment.

Immediately post-hair reduction treatments, effective skin cooling of the epidermis can be helpful. The use of ice or cooling gel packs, Aloe Vera gel etc., can improve patient comfort and reduce post-operative redness (erythema).

CyDen provides client information sheets on hair removal and Post-treatment Guides for the client to take home.

## **ADVERSE INCIDENT PROCEDURE—What to do if anything goes wrong**

If anything goes wrong during treatment such as untoward skin reaction, excessive pain, client taken ill, etc., treatment should be abandoned IMMEDIATELY. (NB. If necessary, the emergency stop button may be pressed or the key removed to prevent any risk of further emission of IPL energy). Appropriate information should be recorded in the client notes of extent of the partially completed treatment with details of any untoward side effects. An 'Untoward Incident Report' should be completed.

Suspected eye damage or serious skin damage should be referred immediately to the Accident & Emergency Dept. of the nearest hospital or via the client's doctor to an appropriate medical specialist if necessary.

In all cases of suspected eye over-exposure to the IPL flash to the operator or a client, an immediate eye test by an ophthalmic specialist should be arranged through the doctor or the Accident & Emergency Dept of the nearest hospital.

## **PROCEDURE IN THE EVENT OF EQUIPMENT FAILURE**

In the event of equipment failure, treatment should be abandoned IMMEDIATELY and the emergency stop button pressed and/or the key removed to prevent any risk of further emission of IPL energy. Remove the mains plug. Details should be recorded in the Client Record of the partially completed treatment with details of any untoward side effects. The appointed Cyden iPulse factory service engineer should be informed immediately of the circumstances of the equipment failure and an Incident Report completed.

This treatment protocol should be adopted in conjunction with the ***iPulse User Manual*** provided by the manufacturer and the 'Local Rules' governing the safe use of the device at the establishment, as these will contain important information to be followed by the operator in respect of:

- potential hazards associated with this type of IPL
- controlled and safe access to the Controlled Area
- the authorised users' responsibilities
- methods of safe working and safety checks
- normal operating procedures
- personal protective equipment (eyewear)
- prevention of use by unauthorised persons and
- adverse incident procedure.

Treatment should only be restarted if the event was a false alarm.